APRIL/MAY 2023

CEEL62B/BEEL62B/UEEL62B — DIGITAL SYSTEM DESIGN

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Define the term word.
2. List out binary arithmetic rules.
3. What is a meant by combinational logic circuit?
4. Define hardware description language.
5. Define encoder.
6. Define strobe and enable.
7. Define sequential logic circuit.
8. Define flip-flop,
9. Define state table and diagram?
10. What is meant by race condition?

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Explain the various basic logic gates with their truth table.

Or

(b) Draw the logic circuit for $F(A,B,C)= A'B+AB'C'+ABC'+ABC$

12. (a) Discuss the design procedure of combinational logic circuit.

Or

(b) Explain the, half adder circuit and truth table with suitable logical figure.

13. (a) Explain in detail 2 to 4 decoder.

Or

(b) Explain in detail Demultiplexer (1 to Demux).

14. (a) Explain the working function of SR flip flop.

Or

(b) Give a short note on state reduction.

15. (a) Differentiate synchronous and asynchronous circuits.

Or

(b) Short note on race free state assignments.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Simplify using K-map.

(a) $Y(A, B, C) = \sum (0,1,6,7)$

(b) $Z(A, B, C, D) = \sum 0, 1, 2, 4, 5, 10, 11, 14, 15)$

17. Discuss the Full adder circuit and truth table with suitable logical figure.

18. Explain the working function of multiplexer in detail.

19. Explain the working function of JK flip flop.

20. Discuss in detail state table and state diagram.

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